DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1, 2, 5, 6, 7, & 10-21, have been considered but are moot in view of the new ground(s) of rejection. The new grounds of rejection are necessitated by Applicants' amendments to the claims which now include further defining the chamber with a mechanical iris and more specifically an electromechanical iris and specific limitations that have been added to the method.

Response to Amendment

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1, 2, 5-7, & 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1 recites an intended use of the analyte chamber – "when said orifice is closed an equilibrium exists between a gaseous concentration of said analyte in said head space and said liquid analyte absorbed in said wick." It is unclear to the Examiner how this limitation further defines the structure of the analyte chamber.

5. Claims 20-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 20 now recites the analyte chamber of Claim 19 further comprises an eletromechanical iris. It is unclear if Applicant is claiming a second iris or if this is further limiting the mechanical iris already disclosed in Claim 19.

6. Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear to the Examiner where the step of "providing the first concentration of said gaseous analyte," is being provided to.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1, 2, 5, 6, 7, & 10 are rejected under 35 U.S.C. 102(e) as being anticipated by HO (US7229593).

9. Applicant's claims are toward devices and a method.

10. Regarding Claims 1, 2, 5, 6, 7, & 10, HO discloses the analyte chamber which can releaseably attached to a portable calibration unit, comprising: A). A wick (See

Column 4 lines 20-24, cotton-ball or other sponge-like material); B). A liquid analyte absorbed in said wick (See Column 4 lines 20-24; NAPL or other volatile substance); C). A chamber comprising: 1). A mechanical iris defining an orifice (See Figure 2 Item 12; source chamber & Item 18; See Column 10 lines 40-43; camera-style iris); and 2). Wherein said wick is internally disposed within said chamber (See Figure 2 Item 14 is inside the analyte chamber); D). Headspace, wherein said headspace comprises a volume within said chamber minus a volume of said wick (See Figure 2 Item 12 has a volume where the wick does not exist); E). Gaseous analyte disposed in said headspace (See Figure 2 Item 16; test vapor); and F). Wherein when said orifice is closed, equilibrium exists between a gaseous concentration of said analyte in said head space and said liquid analyte absorbed in said wick (See Figure 2, the analyte chamber is capable of performing the intended use).

11. Additional Disclosures Included: Claim 2: Wherein said analyte chamber cannot release said analyte in the liquid phase (See Figure 2, the analyte chamber is capable of performing this intended use); Claim 5: The analyte chamber of claim 1, further comprising a plurality of analytes disposed in said wick; Claim 6: A portable calibration apparatus, comprising: A). A positive pressure assembly capable of providing a fluid at a pressure greater than atmospheric pressure (See Column 15 lines 34-41; pumps, fans, compressor, vacuum pump, and liquid pumps); B). A portable detector (See Figure 8; sensor in detection chamber Item 126); C). A fluid flow conduit formed to include an aperture extending therethrough, wherein said fluid flow conduit interconnects said positive pressure assembly and said detector (See Figure 8 Items

180 &122; upstream pump chamber and test chamber); D). An analyte chamber (See Figure 8 housing where Item 112 is located) comprising 1). A mechanical iris defining an orifice (See Figure 8 Item 166 or 118; both movable partitions, which may be camera-style irises); 2). A wick and a liquid analyte absorbed in said wick disposed within said chamber (See Figure 8 Item 112), and 3). Headspace comprising a volume of said chamber minus a volume of said wick, wherein said portable calibration apparatus cannot release said liquid analyte, wherein said orifice is in communication with said aperture, and wherein when said orifice is closed an equilibrium exists between a gaseous concentration of said analyte in said head space and said liquid analyte absorbed in said wick (See Figure 8 volume of space that Item 116 occupies, the vapor); Claim 7: The portable calibration apparatus of claim 6, further comprising a detector connected to said fluid flow conduit (See Figure 8, detector that is located in Item 126); and Claim 10: The portable calibration apparatus of claim 6, further comprising: a first feedback circuit interconnecting said microprocessor and said positive pressure assembly (See Column 10 lines 25-50).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

14. Claims 11-13, 14, 16-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over HO.

15. Applicant's claims are toward devices and a method.

16. Regarding Claims 11-13 & 16-18, HO discloses the portable calibration apparatus of Claim 10 and the method to Claim 14 respectively, wherein said fluid conduit comprises a first portion and a second portion, further comprising: A). A valve interconnecting said first portion of said fluid conduit and said second portion of said fluid conduit; (See Figure 8 Item 142); B Said mechanical iris comprises an electromechanical iris, further comprising an electromechanical iris (See Column 10 lines 41-43); and C). A heater, wherein said analyte chamber is capable of being removeably disposed in said heater (See Figure 8 housing where Item 112 is located and Column 9 lines 55-56). Ho does not explicitly disclose that feedback circuits are used to interconnect said microprocessor with the above limitations. Ho does however disclose that the valve, electromechanical iris, and heater are controlled and/or automatic (The Examiner interprets this limitation as microprocessor controlled); that all of the components of portable calibration apparatus may be made small, compact, and

lightweight using micro-sensors and dedicated microprocessor circuits; the portable calibration apparatus may be portable, e.g., weighing less than about 5 pounds, and where the length of the test chamber may be less than about 1 inch and that a dedicated microprocessor is enclosed on a printed circuit board inside the portable calibration unit (See Column 4 lines 34-43); that to miniaturize the electronics that control and drive the chemiresistor arrays Application Specific Integrated Circuits (ASIC) may be integrated with the chemiresistors on a common substrate; and that the ASIC can perform a variety of functions, including measuring electrical resistance, conditioning data, sensing temperature, and controlling heater elements (See Column 7 lines 33-43). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the connection between the microprocessor and the valve, electromechanical iris, and heater as feedback circuits to maintain an automatic operation of the components.

17. Regarding Claim 14, HO discloses the method to calibrate a stationary gas detector, comprising the steps of: A). Providing a portable calibration apparatus comprising a positive pressure assembly (See Figures 8 & 9 Items 110 or 210); B). A portable detector (See figures 8 & 9 detector located in Item 126 & Figure 9 Item 228; detector); and C). An analyte chamber comprising a mechanical iris defining an orifice, a wick disposed within said chamber, and headspace comprising a volume of said chamber minus a volume of said wick, and a fluid flow conduit formed to include an aperture extending therethrough and connecting said positive pressure assembly with said portable detector; absorbing by capillary action a liquid analyte in said wick, such

that all of said analyte is absorbed in said wick, and such that said wick cannot release said analyte in the liquid phase (See Column 4 lines 20-24); D). Closing said orifice, wherein when said orifice is closed an equilibrium exists between a gaseous concentration of said analyte in said head space and said liquid analyte absorbed in said wick (See Column 10 lines 40-43, the eletrocmechanical iris; this essentially occurs when to allow the analyte to fill chamber 12); E). Disposing said analyte chamber in said portable calibration apparatus such that said orifice is in communication with said aperture (See Figures; Item 12 is configured in this manner); G). Providing a concentration of said analyte in the gaseous phase to said portable detector; (See Column 10 lines 13-24); H). Measuring said concentration using said portable detector (See Abstract); I). Providing said gaseous analyte to said stationary detector (See Column 7 lines 44-65; the chemiresistor array is stationary to absorb the VOCs); J). Calibrating said stationary detector using said concentration (See Column 7 line 44 to Column 8 line 24; this step would be essential for the process of making the chemiresistor array). Ho does not explicitly disclose F). Transporting said portable calibration apparatus to a stationary detector. Ho does however disclose that chemiresistor detectors may be used to monitor VOCs in a variety of places (See Column 4 line 56 to Column 5 line 8). Ho also discloses that the chemiresistors may be made of an absorptive material and that these sensors are used for monitoring VOCs from toxic chemical spills, leaking underground storage tanks, etc.(See Column 1 line 56 to line 17 in view of Column 4 line 44 to Column 5 line 9 & Column 7 lines 44-65). It would have been obvious to one of ordinary skill in the art at the time the invention was

made to modify the method to include the step F). Transporting said portable calibration apparatus to a stationary detector because these chemiresistor sensors may be used as the vapor source in the analyte chamber and that Ho explicitly states a need exists, for an easily portable device that may be carried and used in the field (See Column 2 lines 22-24).

18. Regarding Claim 19, HO discloses the article of manufacture comprising a computer useable medium having computer readable program code disposed therein (See Column 4 lines 38-40, a microprocessor essentially contains program code to operate the circuits). Ho does not explicitly disclose that the computer readable program code comprising a series of computer readable program steps to effect: measuring a first concentration of said gaseous analyte emitted from said wick; adjusting the flow rate of fluid provided by said positive pressure fluid assembly; measuring a second concentration of said gaseous analyte. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the program code to incorporate adjusting the available concentration of a gaseous analyte, wherein said article of manufacture comprises a portable detector, an analyte chamber comprising a mechanical iris defining an orifice, a wick disposed within said chamber, liquid analyte absorbed in said wick, and headspace comprising a volume of said chamber minus a volume of said wick, wherein when said orifice is closed an equilibrium exists between a gaseous concentration of said analyte in said head space and a liquid analyte absorbed in said wick, and a positive pressure fluid assembly, wherein said article of manufacture is capable of providing a concentration of said analyte in the gas phase to said portable

detector because this would allow for full automation of the portable calibration apparatus which HO suggests is done via dedicated microprocessor circuits (See Column 4 lines 38-43).

19. Regarding Claim 20, HO discloses the article of manufacture of claim 19, wherein said analyte chamber further comprises an electromechanical iris (See Rejections under 102 above). HO does not explicitly disclose that said computer readable program code further comprises a series of computer readable program steps to effect adjusting the size of said electromechanical iris. HO does however disclose that the orifice may be an electromechanical iris. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the microprocessor to include the program code for adjusting the opening of the electromechanical iris because according to Ho, the electromechanical iris may be automatic.

20. Regarding Claim 21, HO discloses the article of manufacture of claim 20, further comprising a heater, wherein said analyte chamber can be removeably disposed in said heater (See Figure 8 Item 160; heating jacket & Colum 9 lines 50-60). HO does not explicitly disclose that said computer readable program code further comprising a series of computer readable program steps to effect adjusting the temperature of said heater. Ho does however disclose that the heating elements are used to control the temperature in the chambers. It would have been obvious to one of ordinary skill in the art at the time the invention was made to program the computer code on the article of manufacture to include code for adjusting the temperature of said heater to accelerate vaporization of the liquid analyte or promote evaporation of other liquids.

21. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over HO in view of ADRIANY ET AL (US6405135).

22. Applicant's claim is toward a method.

23. Regarding Claim 15, HO discloses the method of claim 14, further comprising the steps of: A).Providing a first concentration of said gaseous analyte; A). Providing said first concentration of said gaseous analyte to said stationary detector (See Column 5 lines 9-16); and B). Measuring said a first concentration using said portable detector (See Column 4 lines 16-24). Ho does not disclose D). Calibrating said stationary detector using said first concentration; E). Providing a second concentration of said gaseous analyte; F). Measuring said second concentration using said portable detector; G). Providing said second concentration of said gaseous analyte to said stationary detector; H). Calibrating said stationary detector using said second concentration.

24. ADRIANY ET AL discloses the method of calibrating a remote gas detector wherein the method comprises calibrating the stationary detectors (See Colum 9 lines 24-27; The Examiner interprets calibration as using at least a first and a second concentration of a gas vapor). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Ho with the method of ADRIANY ET AL because according to ADRIANY ET AL the housing for the sensors is provided with a sampling port which allows for manual sampling (See Column 8 lines 4-9).

Telephonic Inquiries

25. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BOBBY RAMDHANIE whose telephone number is (571)270-3240. The examiner can normally be reached on Mon-Fri 8-5 (Alt Fri off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on 571-272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/B. R./

/Walter D. Griffin/
Supervisory Patent Examiner, Art Unit 1797